REMARKS

Claims 7 and 15 were rejected because of lack of antecedent basis for surface card and downhole card. The article, "the" has been replaced by the article "a" to cure that problem by amendment. Claim 22 has been amended to indicate that the steps (A), (B), (C), (D) of claim 15 and step (E) of claim 21 are cyclically performed. Claim 53 has been amended so that it depends from claim 48 (rather than 40) thereby providing antecedent basis for "said software." All of § 112 problems identified by the examiner have been cured by the amendments to claims 7, 15, 21, and 53.

All but one of the independent claims have been amended to define the invention as including a permanently installed or positioned output system at the processor which provides a viewable graphical representation of at least one card on a regular and on-going basis as part of the normal operations of the system. See the amendments to claims 1, 7, 4, 39, 40. Claim 40 has been amended to indicate that the graphical representation of both the surface card and the downhole card are displayed on a display screen permanently placed in proximity to the pump.

Applicants believe that each of the independent claims defines patentably over the art of record. Vazquez (U.S. 6,343,656) shows at Figure 2 determination of surface and downhole dynagraphs (cards) but shows no display of same at the well site.

McCoy shows providing a portable battery powered component 210 at the well site with a display 214. McCoy provides software in portable computer 210 for displaying screens which make the operation and the use of transducer 60 "relatively simple". (See Col. 10, lines 28-40). Surface cards and down hole cards may be displayed on screen 214 of the portable computer 210.

McCoy does not disclose or suggest

(1) a permanently installed or positioned output system in association with the pump, for generating at least one card,

(2) on a regular and on-going basis as part of the normal operation of the system or method, or

(3) simultaneous display of a downhole card and a surface card.

Furthermore, there is no suggestion, either literal or implied, of permanently installing McCoy's lap-top computer 210 in proximity of his pump or providing a viewable graphical representation of a card on a regular and on-going basis.

As indicated above, Applicant's define their invention in all the independent claims as positioning an output system in association with the pump for generating at least one card on a regular and on-going basis as part of the normal operation of the method or system. This characterization of applicant's invention provides either a surface or a downhole card at the pump location, without the need for a lap top computer to be brought on location.

A portable laptop computer of the prior art, e.g., as shown in McCoy, uses a downhole card to manually calibrate a surface card at the well site. But McCoy does not routinely provide such cards during the life of the well. In other words an operator must come to the well, calibrate the offset for the card (see Col. 4, lines 18-53, and Figure 21) and finally obtain a calibrated display of a surface card by first zeroing a downhole card. Furthermore, when the operator leaves the well site, he takes the portable computer with him. When he returns, the whole procedure must begin again to calibrate the surface card etc. Applicant's invention obviates such steps by permanently installing a controller at the pump and periodically determining and displaying at least one of a surface card or a downhole card. Simultaneously displays are not provided by McCoy. Applicant's independent claims 40 and 48, and their dependent claims, provide for simultaneous display of both a surface card and a downhole card.

Claims 40 and 48 further specify that both the surface card and downhole card are presented with position of both cards having a common axis with the same scale on that axis for both the surface and downhole cards. Both a surface card and a downhole card are available on location. Furthermore, claims 41, 42, 43, and 44 specify that the method generates a display screen representing surface card and a downhole card as specified in near real time measures. For example, claim 44 specifies that "near real time" means within 1 reciprocation of the pump. Such a system is advantageous, as compared to the prior art, because the surface card and the pump card, commonly scaled, are presented almost instantaneously, so an observer of the display system can immediately take decisions that can affect the operational characteristics of the pumping system. Such characteristics include change of pumping speed, size, stroke length, spacing unit balance, increase/decrease of downtime, and so on. Such information obtained in near real time, e.g., within one reciprocation of the pump, allows a person viewing the display to take action to dramatically improve the operation of the well, thus increasing the well's profitability for the producer. The prior art shows no such system with such a display.

Chandra (U.S. 4,594,665) likewise does not provide a permanently installed or positioned output system that produces on a regular and on-going basis a card display as part of the normal operation of the system.

Accordingly, independent claims 1, 7, 14, 39, 40, and 48 are allowable as being unobvious over Vazquez in view of McCoy.

Claims 40 and 48 define over the references, because they define the invention as including software that generates a surface card and a downhole card (1) on a display screen permanently placed in proximity to the pump and (2) the surface card and downhole card are presented where position for both cards are on the same scale.

In view of the amendments and remarks presented above, applicant's request reconsideration and allowance of the following claims remaining in this application: 1-6; 7-14, 15-22; 39, 40-47; 48-55.

Allowance of the application and passage to issuance is requested.

Respectfully submitted,

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